

A SUPPLEMENT TO THE REVISION OF AUSTRALIAN *PRISTOMYRMEX*
SPECIES (HYMENOPTERA: FORMICIDAE)

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A SUPPLEMENT TO THE REVISION OF AUSTRALIAN *PRISTOMYRMEX* SPECIES (HYMENOPTERA: FORMICIDAE)

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Abstract

Two new *Pristomyrmex* species are described from Mt. Lewis, N. Queensland, and Acacia Plateau, N.S.W. New distributional and biological data on several older species are presented.

The material discussed below has come to hand since the completion of my recent revision of the Australian *Pristomyrmex* species (Taylor 1965), to which this paper is a supplement. The two new species described here bring the total number known from Australia to six. Material of one of the new species has been generously provided by Professor P. J. Darlington, Jr., of Harvard University, Cambridge, Mass., U.S.A. Specimens verifying the new distributional records for older species are in the Australian National Insect Collection, Canberra. They were collected mainly by the Rev. B. B. Lowery S.J. of Sydney, whose generosity in making them available is gratefully acknowledged.

Details of measurements and indices are defined in the earlier revision, but the following change has been adopted. Before measuring WL (Weber's length of the mesosoma) the lateral viewing position of queen or worker specimens is adjusted so that the tips of the propodeal spines are aligned (much as shown in Fig. 2). This is done at the centre of the field of view of the measuring ocular, to avoid parallax error, and the specimen is then moved horizontally to align the WL axis with the eyepiece ruler and facilitate measurement. Repeatability of WL measurements is greatly enhanced by this procedure. It was not used in the earlier paper; so that WL values given there are slightly higher than those which would now be obtained.

Pristomyrmex thoracicus Taylor

New records

N. QUEENSLAND: Palmerston National Park, nesting in soil under logs, rain forest, ca 305 m (5.xi.1966; R. W. Taylor, Accs. 66.261, 66.262). Two colonies, both with entirely larval brood, each with a dealate queen, and with 18 and 3 workers respectively. The larvae vary in size, but probably represent a single generation; many appear almost full-grown. All records of *P. thoracicus* are from the Atherton Tableland at elevations between 300 and 760 m.

Pristomyrmex wilsoni sp. n.† (Figs. 1, 2)

Type locality.—N. QUEENSLAND: Mt. Lewis (16°34'S, 145°17'E), near Julatten (30-31.x.1966; R. W. Taylor, Accs 66.150, 66.160).

The holotype and paratypes were taken individually, straying on the surfaces of rocks and logs in rain forest at an elevation of about 915 m. Collections were made on two overcast days, but not on a third, which was brightly sunny. Strays were not seen during several hours night collecting (to about four hours after sunset) at the same locality.

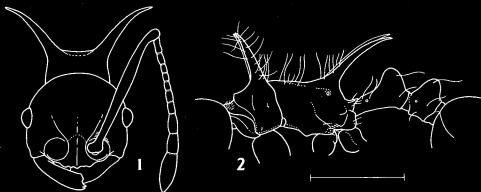
Type deposition.—Holotype and four paratypes in Australian National Insect Collection, C.S.I.R.O., Canberra (Type No. 7502); two paratypes in Museum of Comparative Zoology, Cambridge, Mass., U.S.A.; and one in Queensland Museum, Brisbane.

Type workers

The following description is based on the holotype and seven paratype workers.

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†This species is named for my friend Professor Edward O. Wilson, of Harvard University.



FIGS. 1, 2.—*Pristomyrmex wilsoni* sp. n., holotype worker: (1) head and pronotal outline, frontal view, right antenna and pilosity omitted; (2) mesosoma, petiole and postpetiole, lateral view. Scale line 1 mm.

Dimensions (holotype cited first): TL ca. 4.8, 4.5-4.9 mm; HL 1.13, 1.08-1.13 mm; HW 1.17, 1.11-1.18 mm; CI 104, 103-105; SL 1.40, 1.32-1.41 mm; SI 120, 119-122; PW 0.66, 0.64-0.68 mm; WL 1.29, 1.25-1.33 mm; propodeal spine L 0.87, 0.83-0.87 mm; petiole L 0.53, 0.50-0.53 mm; post-petiole height 0.45, 0.44-0.45 mm.

General features as shown in Figures 1 and 2. Mandibles with two strong adjacent apical teeth and a broad truncated basal one, separated by a broad diastema. Clypeus with a median longitudinal carina; its anterior border distinctly dentate in the middle and with two blunt denticles on each side. Antennal scrobes barely depressed, lacking a ventral carina. Scapes exceedingly long; when laid in the scrobes, with the head in frontal view, they exceed the level of the median occipital border by about 1/3 their length. Proportions of funicular segments as shown in Figure 1, a 3-segmented club distinctly differentiated. Eyes strongly convex, almost hemispheroidal. Ocular index (maximum eye diameter $\times 100/\text{HW}$) 17-18. Mesosomal structure as shown in figures. Pronotal dorsum truncated behind its anterior neck portion. Mesosomal spines exceptionally long. "Pronotal spine length", measured as prescribed by Taylor (1965, p.37), about $0.42-0.44 \times \text{HW}$. When the mesosoma is viewed from directly above the pronotal and propodeal spines diverge from the midline at angles of about 60 and 30 degrees respectively (these angles are means for the 8 specimens). Promesonotal and mesometanotal sutures lacking on mesosomal dorsum. Petiolar and postpetiolar nodes slightly longer than broad in dorsal view; their apices almost conical, narrowly rounded above.

Body generally smooth and shining, almost entirely without sculpturation; a few faint vestiges of longitudinal striae on mandibles. Underside of head transversely ribbed along postgenal suture, and with a few somewhat vestigial broad foveolate punctures on the genal and postgenal areas.

Mandibular hairs moderately abundant, decumbent, ca 0.1-0.2 mm long. Cranial hairs erect to suberect, ca 0.15-0.35 mm long, the longest on frons and occiput, shortest on genal and postgenal areas; generally scattered at intervals of ca 0.1 mm, except for a mid-dorsal strip on the frons, and the antennal scrobes, which lack pilosity; the longest frontal hairs frequently crinkled. Pilosity of mesosoma and nodes as shown in Figure 2. Gaster completely naked, except for a few short hairs at its apex. Antennae and legs abundantly clothed with suberect hairs ca 0.1-0.15 mm long.

Colouration much as in *P. wheeleri* Taylor (see colour plate in Taylor 1965) but with the mesosoma somewhat darker and duller in colour, and without the darkly infuscated gastric apex. Head very dark umber brown, mesosoma dull dark golden brown, apices of spines lighter. Antennae, legs and metasoma (petiole, postpetiole and gaster) lighter golden brown, the first gastric tergite especially lustrous.

Comments

This remarkable species is easily distinguished in *Pristomyrmex* by its exceptionally developed mesosomal armament, combined with a general lack of foveolate sculpturation, and very elongate scapes. The affinities of *P. wilsoni* are not clear, but it could be an aberrant descendant from stock near the ancestry of the *quadridentatus* species group.

Pristomyrmex quadridentatus (Ern. André)

This species shows marked colour variation. Typically it is self-coloured golden brown, but there is a bicoloured form, with contrasting dark brown meso-

soma, petiole and postpetiole. This variant is apparently produced wherever *quadridentatus* is sympatric with the related *P. wheeleri* (Taylor 1965).

New records (Unless otherwise indicated all of the following collections were made in rain forest by B. B. Lowery).

(1) *Self-coloured form*.—NEW SOUTH WALES: Brunswick Heads, faunal reserve, two colonies nesting *ca* 5 cm above ground under bark sheaths of Bangalow palms (*Archontophoenix cunninghamiana*), swampy flat of creek bed, near sea level (6.ix.1966, 5.ix.1967). Warrell Creek, near Macksville, colony from red-rotten log, *ca* 46 m (21.viii.1964). Upper Allyn Valley, Lister Park (near Eccleston), dealate queen and series of workers from separate rotting logs; 3 series of workers straying nocturnally on logs, 2-4 hours after sunset, rain forest, *ca* 610 m (11-14.xii.1967; R. W. Taylor and C. G. Brooks).

(2) *Bicoloured form*.—S.E. QUEENSLAND: Numinbah Natural Arch, colony from red-rotten log, *ca* 457 m (3.ix.1964). N.E. NEW SOUTH WALES: Tomewin, *ca* 12.8 km N. of Murwillumbah, 1 worker foraging *ca* 2.4 m above ground on tree, early afternoon, *ca* 366 m (2.ix.1966). Nobby's Creek *ca* 7 km N.W. of Murwillumbah, colony under bark cover of Bangalow palm, *ca* 457 m (30.viii.1967). Mt. Warning State Park, 2 colonies from rotten logs, *ca* 305 m (25.viii.64, 30.viii.1966); colony from under bark sheath of *Archontophoenix* palm, *ca* 5 cm above ground, *ca* 305 m (7.x.1966); a single dealate queen from a red-rotten log, *ca* 610 m (9.x.1965).

Comments

The previously observed distributional correlation between bicoloured *quadridentatus* and *P. wheeleri* is further supported by these records, notably those from Tomewin and Mt. Warning.

The Brunswick Heads and Allyn Valley collections greatly extend the known range of self-coloured *quadridentatus* to points respectively much further north and south than previous records. Moreover, Brunswick Heads is only about 30 km from Mt. Warning State Park, where the bicoloured form occurs (along with *P. wheeleri*). Field investigations of my "character displacement" hypothesis, proposed earlier to explain the variation of *quadridentatus* (Taylor 1965), would thus appear to be a simple matter in this area.

This species has been previously reported nesting mainly in rotting logs; so the records of colonies taken under the bark sheaths of Bangalow palms are interesting. Rev. Lowery reports that many ant species usually found in logs may be taken under palm sheaths in the rain forests of north eastern New South Wales. The nocturnal strays collected in the Allyn Valley showed behaviour exactly like that described for the bicoloured form of this species by Taylor (1965).

Pristomyrmex wheeleri Taylor

New records (All of the following collections were made in rain forest by B. B. Lowery).

N.E. NEW SOUTH WALES: Bilambil area, *ca* 4.8 km N. of Tumbulgum, nests under rocks, one *ca* 800 m (13.ix.1965), one *ca* 150 m (13.ix.1966), two *ca* 240 m (7.ix.1967). Tomewin, nest between rocks, *ca* 457 m (27.viii.1964). Wollumban State Forest near Tyalgum, 4 nests under rocks, *ca* 457 m (31.viii.1964). Mt. Warning State Park, nest between rocks, *ca* 915 m (25.viii.1964); nest in red-rotten log but buried about 8 cm below ground level, *ca* 305 m (30.viii.1966). Blue Knob Mt., Nightcap Ranges, N. of Lismore, 6 colonies under volcanic rocks, *ca* 365-915 m (29.ix.1965, 5.ix.1966). Rev. Lowery comments (*in litt.*) that the elevational range of *P. wheeleri* on Mt. Warning is from *ca* 270-915 m, and further confirms that virtually all colonies are found in rain forest nesting in the soil, usually under or between rocks, often in a tangle of small plant roots. In his experience *wheeleri* is absent from sea level rain forest in N.E. New South Wales.

Pristomyrmex erythropygus sp. n.

Type locality.—N.E. NEW SOUTH WALES: Acacia Plateau, near Old Koreelah (*ca* 28°24'S, 152°25'E), in rotting logs (November, 1957; Darlingtons).

Other details are not known, but the type material was probably taken in rain forest at ca 600 m (P. J. Darlington, personal communication).

The holotype and paratypes, now pinned separately, were originally assembled on two pins.

Type deposition.—Holotype and three paratypes (worker and queen) in Museum of Comparative Zoology, Cambridge, Mass., U.S.A. (Type No. 31325), two worker paratypes in Australian National Insect Collection, C.S.I.R.O., Canberra.

Type workers

The following description is based on the holotype and four paratype workers.

Dimensions (holotype cited first): TL ca 4.0, 3.8–4.1 mm; HL 1.05, 0.99–1.07 mm; HW 1.17, 1.12–1.21 mm; CI 112, 112–113; SL 0.99, 0.93–0.99 mm; SI 85, 81–87; PW 0.56, 0.56–0.57 mm; WL 0.99, 0.98–1.00 mm; pronotal spine L 0.11, 0.08–0.10 mm; propodeal spine L 0.27, 0.22–0.26 mm; petiole L 0.37, 0.34–0.38 mm; postpetiole height 0.35, 0.34–0.38 mm. One specimen (HW 1.15 mm) has relatively short scapes, yielding the low values for SL and SI given above. Ranges for these dimensions in the other paratypes are SL 0.98–0.99 mm; SI 85–87.

Close to *P. wheeleri* Taylor, and agreeing with its original description (Taylor 1965), except for the following details.

1. Scapes relatively short; when laid in the scrobes, with the head in frontal view, they surpass the level of the median occipital border by less than half their maximum thickness (the occipital border is exceeded by 1–1.5x scape thickness in *P. wheeleri*).

2. Mesosomal armament relatively less developed. Pronotal spines shorter than in either *wheeleri* or *quadridentatus*, and subequal in size to propodeal spines in side view. The latter proportionately a little shorter than in *wheeleri*.

3. Sculpturation generally similar, but the promesonotal dorsum, though shining, is vaguely longitudinally sculptured, with four or five distinct low, smooth rugae on the anteromedian part of its mesonotal portion. This area is entirely smooth and shining in *wheeleri*.

4. Pilosity of head, mandibles, antennae, mesosoma and legs as in *wheeleri*; that of petiole, postpetiole, and gaster very different. Petiole and postpetiole with moderately long bilaterally paired hairs distributed as usual in the *quadridentatus* group (see Taylor 1965, Figs. 8 and 12), and each with several additional pairs of fine, slightly shorter hairs on the crests of their nodes. Gaster, except for anterior half of its first sternite, with a moderately dense cover of long decumbent to suberect hairs. These hairs ca 0.05–0.15 mm long and spaced at intervals of about 0.05–0.10 mm on the first gastric tergite, which is quite naked in *wheeleri*, and in all other known Australian *Pristomyrmex* species.

5. Post-cephalic colouration about as in *wheeleri*, head similar in hue to mesosoma, that is, golden brown. Mandibles, antennae, legs, and metasomal structures slightly lighter; first gastric tergite slightly less darkly infuscated than is usual in *wheeleri*.

Paratype queen

A unique dealate queen, originally mounted with two workers of the type series, has the following dimensions:

TL ca 4.5 mm; HL 1.12 mm; HW 1.30 mm; CI 116; SL 1.02 mm; SI 78; scutum W 0.80 mm; WL 1.23 mm; propodeal spine L 0.22 mm; petiole L 0.40 mm; postpetiole height 0.40 mm; eye diameter 0.23 mm; ocular index 18. Generally similar to paratype queens of *P. wheeleri*, but with the same distinguishing features of colouration and pilosity seen in the workers. Also, the scapes are relatively short (as in the worker), the pronotal spines are weakly represented by low obtuse tumosities, and the propodeals are relatively small, being subequal in size to the metapleurals.

Comments

P. erythropygus is clearly related to *P. wheeleri* but the differences in mesosomal armament, and especially in gastric pilosity, allow immediate differentiation of the two, and their separate specific status seems assured. It is likely that these species will eventually be found in sympatric association. *P. wheeleri* has not been recorded from Acacia Plateau, but it is known from several localities not too distant from that site (e.g. Woodenbong, Tooloom Range, Unungar Forest).

REFERENCE

- TAYLOR, R. W. (1965).—The Australian ants of the genus *Pristomyrmex*, with a case of apparent character displacement. *Psyche, Camb.* 72(1): 35–54.